

# ABSTRACT

A solid state waveguided structure a core fabricated of a lasing medium, diffusion-bonded to a cladding fabricated of a laser-inactive material. The medium of the core comprises a lutetium-aluminum-garnet material doped with ions of ytterbium, lutetium-aluminum-garnet material doped with ions of neodymium, and lutetium-aluminum-garnet material doped with ions of thulium, and the laser-inactive material of the cladding comprises an yttrium-aluminum-garnet material. A method of fabricating a solid state waveguided structure with improved characteristics comprising using a combination of a trivalent ions of ytterbium- doped lutetium-aluminum-garnet core and a yttrium-aluminum-garnet cladding.